October 5, 1955

2118
1 of 2

HIM

Out of habit, I am writing you again a technical progress report. After our meeting last Saturday, I realized that there is a possibility that this should go to someone else but until you give me some information as to whom I should be writing, I will continue to send this information to you and hope that you make the proper distribution.

Most of the past month was spent at the test site, since I was in residence there from the 14th through the 29th. We had our expected share of minor troubles but, by and large, the results were more encouraging than we had any right to expect. For the record, let me enumerate the problems as they developed.

First the initial flight of the periscope indicated that there had been some slip in determining the eye point which would be most comfortable for the pilot, and that it was necessary for him to sit in a very awkward position in order to catch the view. This, I believe, resulted from the fact that when the original measurements were made in the mock-up cockpit, the pilot was wearing a seat-pack and back cushion which were quite different from those now employed. In any event, we have installed a supplementary lens to shorten the viewing distance but some significant changes will have to be made in the structure of the head end to change the angles by the amounts required. These changes will be incorporated in subsequent periscopes but the two already delivered will have to be modified "in the field". I believe it was a very encouraging fact that the pilot does suffer the inconvenience of the necessary position in order to see through the instrument, and so it must be providing some useful information.

The number two aircraft had already been worked over by the flight test instrument people when the periscope arrived. By relocating a considerable amount of previously installed plumbing and electrical cabling, we were able to shoe-horn the optics and hand control into their design positions but there was no space left for the control cables interconnecting the two units. It did not seem profitable to tear out the large amount of electrical cabling which already occupied the holes designed for these periscope control cables.

The #3 aircraft will have a proper installation since we are on the spot first this time. The charting camera gave some difficulty in that the light levels were considerably higher than we had expected and so some on-the-spot experimental work was required to obtain proper exposure. Serious banding on the film was immediately apparent when the exposure was correct and this is now traceable to the speed control governor on the drive motor. We are actively engaged in a study of possible methods of correcting this phenomenon and I am quite sure the next camera will be satisfactory with regard to this fault.

We had expected to be able to obtain sufficient quantities of standard 70 mm film in the L. A. area because of its wide use in the movie industry. This proved an unfounded hope and while waiting for an additional supply to be sent from Rochester, we tried the thin base material which we had on hand.

25X1

October 5, 1955

The many problems associated with handling this stock were solved so that now the camera operates satisfactorily with either material. We had not originally planned to use this thin base but a few pounds may be saved by its employment.

Some minor problems of oil and fuel leaks gave us a hard time keeping the domes and windows clean but once these were taken care of, we had no further difficulty with fogging during the test flights. The over all problem of making installations at the test base is a serious one from the point of view of cleanliness. Our configurations have been extremely dirty inspite of everything we have been able to do with vacuum cleaners and protective canvas covers. When airplane #1 has been sufficiently reworked so that it may be conveniently moved out of hangar #1, then installation in aircraft #2 inside the hangar will permit a more cleanly procedure.

With regard to the 24" cameras, these have operated quite satisfactorily giving gratifying resolution even though the IMC rates are not quite optimum for the flight conditions experienced during the tests. Some minor shutter troubles have appeared but they are of the type expected in the reworked Fairchild units. In no case that we are aware of has a shutter failed in flight although there is some indication that there is a variation in the exposure time which is larger than we would like to see it. I would say that the principle difficulty encountered in our test flight program has arisen in the processing of our test films. We provided ourselves with a B5 processing unit which is quite inadequate. We have been trying to acquire for sometime an A10 unit but delivery scheduling of these units to the Armed Forces has made it impossible for a "commercial" buyer to receive any attention. During his visit, we talked this problem over with RB and he agreed to see what could be done to obtain this unit either as GFE or on a preferred schedule basis in some present procurement. The thin base film gave an exceeding amount of trouble in the processing until we learned all of its peculiarities. Current processes are apparently satisfactory but quite laborious.

On the positive side, as I mentioned above, the results have been better than expected. The fact that everything worked and gave good pictures on the first flight, I feel, is a good testimonial for the boys at Hycon who designed and worked on the equipment as well as those in [redacted]s group at the base who made the installation and checked it all out. As deduced from the images of the marks on the lake, the resolution is considerably better than would be expected from standard equipment. Remember that these lines are only 18" wide and it is not difficult to believe that two of them spaced by this amount would be resolved. I have made some determinations of the actual contrast between the lines and the background on the lake and find this to vary from about .9 where they are cleanest to around .03 where they have become most dusty. Even in the worst cases they are still quite visible on the negatives.. If two lines spaced by 18" could be resolved, this is a bit better than 30 1/mm. We have now available, but not so before I left, a set of targets consisting of some pieces of plywood which can be laid out during a mission and picked up immediately afterward. The largest, 4x8', corresponds to 12-1/2 1/mm; the intermediate size, 2'6" x 8', 20 1/mm; and the smallest, 1'6" to 33 1/mm. We are now engaged in scheduling our flights to place these targets in various parts of the photographic field, to provide quantitative data on resolution. This brings me to the point I made on Saturday where the need for a project test engineer at the test

25X1

October 5, 1955

site is evident. Present personnel are competent and active in base operations, aircraft test operations and photographic equipment test operations as soon as clearances come, but no one is tieing these together from a point of view of the testing of the capabilities of the equipment for your purposes. If you would provide us with a test program of the things you would like to see, particularly of the sort which we discussed on Saturday, it is possible that this work could be carried on by present personnel but conditions change so rapidly and ideas develop on the spot so much more easily that someone in residence could do a much better job. In addition, I would like to request that someone from EK pay a visit to the test site to go over the problems of photographic material as they exist there.

With regard to activity at home and at Hycon during this period, my report is again quite favorable in that the production of configurations is proceeding. The first A-1 configuration will be at the base the first week in October, and test flights will start on it very shortly thereafter. The installation problem has proved to be a much simpler one than we had previously anticipated, primarily because all of the fits may be checked on the various jigs available at Hycon. There is a steady flow of reworked 24" lenses now moving westward so I anticipate no difficulty in providing for the needs of these units as they develop in the forthcoming weeks. Windows are also in good supply for installation into the various hatches. The new 24" lens and the new 36" lens are at a complete stand-still for lack of new optical design data. In my last letter to you dated Sept. 13 I indicated a discussion with Jim which promised new design data on the 23rd and 26th of September. When I saw him this past weekend, he indicated that he had not had an opportunity to look at these problems seriously with the result that the delivery dates which I quoted you in my last letter are no longer possible. No new dates are available since I have not been able to obtain an indication as to when the designs will be forthcoming. The new design for the 24" does not distress me very much for the reworked lenses are filling the gap but it would be a great pity if B configurations were significantly delayed by lack of a design at this time. Anything you can do to assist in this problem would be greatly appreciated for our work here at Peco is completely dependent on the availability of designs from Jim.

ILLEGIB

In a telephone conversation with George, I indicated my desire to have two additional people cleared for visits to the test site. [redacted] has bee 25X1 project engineer on the charting camera, and I believe that an understanding of the conditions and results produced by a visit to the test site would be very beneficial. If clearance could be arranged either permament or interim, by the 31st of October, the travel problem would be most easily solved. In addition, I would like to request clearance for [redacted], who has been project 25X1 engineer on the periscope and the problem of the proper location of the eye point and the interconnecting of the hand control and periscope in place can be handled best by him. Both of these individuals will prove very valuable in training for service of the two units in question.

I have not heard a word from you on the several amendments requested. We are looking for a few dollars on invoices for last month, too.

Best personal regards, and best wishes in your new activities.

ILLEGIB

RMS/dmg